ASL

Australian Society for Limnology Inc.

NEWSLETTER

Volume 43 # 3, September 2005

Registered by Australia Post

Print Post Publication No. PP 381667/00125

ABN 54 606 483 226 ISSN 1037-2512

AUSTRALIAN SOCIETY FOR LIMNOLOGY INC.

The Australian Society for Limnology Inc. (ASL) is an Australian-based scientific society whose focus is the study and management of inland waters. The ASL was established in 1961, and has a current membership of over 650 researchers, managers, engineers, teachers and tertiary level students from all states and territories. Members have a strong professional interest in inland aquatic issues, including the maintenance of biodiversity, the maintenance and/or restoration of water quality, and the wise use of aquatic resources. The Society also has a strong interest in fostering the scientific and intellectual development of tertiary students.

The Society includes members working in government agencies, tertiary institutions and many industries related to aquatic resources. Through their daily activities, members have contact with local communities and are in a sound position to interpret and advise on inland water issues. The Society has a substantial knowledge base, and has assumed a responsibility to ensure that this is available to those who manage inland waters.

Accordingly, the charter of the ASL is to further our understanding of Australia's inland waters and to promote their wise use and sustainable management. In this manner we will contribute to the continued existence of this valued resource and the maintenance and enhancement of the quality of life for all Australians. The ASL regularly produces a newsletter with notes on limnological activities, articles of interest, book reviews and announcements of upcoming events likely to be of interest to Members.

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PRESIDENT'S REPORT

Dear Members of ASL,

This marks the second newsletter edited by Emma and it is only now that I have finally learnt how to update her contact details on the web page. Emma has taken over from Rhonda at the beginning of the year. Rhonda Sinclair has been unwell recently and on behalf of ASL we all wish her a speedy recovery and look forward to catching up in Tasmania.

As I foreshadowed in my president's report in the last newsletter we are in the middle of implementing our new web-based ASL system that integrates all of our publishing, conference management, communication and membership management activities. A longer description of the system is also provided in this newsletter.

At the time of writing this we are still experiencing some teething problems and we ask for your patience and assistance as we implement these changes.

I would like to take this opportunity to acknowledge in particular the help of John Gooderham who has taken on the daunting task of using the new system for the conference organisation - it will be overwhelming this time, but fulfils a suggestion made several times in the past to pass on experiences of each conference organising committee instead of new volunteer committees having to feel that they are starting yet again from scratch.

However, this has provided some extra challenges for this years organising committee and a huge thanks goes out to them!! I am also very grateful for the support of Margaret and Heather in what has been a complex period of change - especially Margaret's amazing ability and experience at checking and anticipating problems and potential issues. In conjunction with the change of web-site Margaret has also come to grips with the introduction of the GST to our business and a change-over of her computer system, something that we have been on the brink of having to do for a few years now - more about that below.

A second change has been that we have finally had to register for GST as our annual turnover is likely to be over $100,000 with the increases in the size of our conferences and membership. This means that we need to add 10% onto our membership fees and most fees associated with our conferences. And we will now be providing tax invoices.

The new website, the 2005 conference and the fact that the ASL is now registered for GST mean that as a society, we need to do a little housekeeping. In particular we need you as members to register yourselves on our site and update your details. As financial members you will have access to the membership directory on the web and to our newsletters. Public, non-financial members of the public that register on the website will not have access to this.

We will also shortly be sending out subscription notices for 2005-2006 via the bulk email facility on the site.

I hope you will take full advantage of the improvements of the way we do our day-to-day business and find the time to familiarise yourself with our new website and use it to contribute to our society.

In addition to our extra tasks of re-organising ourselves, Andrew has continued to represent us on the FASTS board and is now the aquatic cluster representative. His report on the second board meeting he attended in Sydney later in this newsletter. The retrospective medals for past ASL medal/Jolly award winners have been sent out and it has been a great pleasure to read some of the replies as they contain stories about 'the olden days in ASL?- Andrew has been working on an idea to collect some of our history and this has provided wonderful contacts and ideas.

It has been a busy three months, no doubt as will be the next 3 months in which our conference takes place, I hope to see many of you at the upcoming conference in Tasmania,
Until then, take care and have fun!
With best wishes,
Sabine Schreiber (ASL president)

ASL CONFERENCE 2005 - SEE PAGE 53

A new web-based publishing, conference management, communication and membership management system for ASL

Why:

Over the last few years our society and conferences have grown significantly in membership. We have kept up with our growing society through developing our website for publishing and disseminating information, using the web to organise our conferences, using email lists for discussions and, more recently, dissemination of our newsletter and adopting a web-based membership database. It is now time to integrate these activities into one system to simplify the management of the society for the volunteers that so generously provide their time for managing our website, discussion lists, conferences, newsletters and membership administration.

How have we gone about doing this:

Over the last few months a group consisting of the president (Sabine Schreiber), treasurer (Margaret Hart), web administrator (Heather Shearer) and a representative of the current conference organising committee (John Gooderham) have examined options for a new management system for ASL. This involved consultation with computer specialists, a search for existing suitable products, discussion with other societies and an evaluation of a proposal put to us by the Regional Institute. We finally recommended to the full executive that we accept the proposal by the Regional Institute and the executive approved this. The Regional Institute Limited [www.regional.org.au] is an independent, not-for-profit company based in NSW, that provides web publishing solutions for academic and professional associations, not-for-profit groups and educational and research institutions who typically have a membership or subscriber base,

publish large amounts of information and host national and international conferences. TRI already works with AMSA and ASFB.

Utility of what is being implemented

1. Improving membership management and administration.

- Online registration and password protected login
- Members will be able to login and manage their own details, create a CV style profile, upload conference abstracts and take part in discussion forums.
- Website administrator can set up different user groups and set permissions for these groups, eg, Executive, and then send bulk emails to various groups in each State.
- The online database can be downloaded in csv format and saved in Excel.
- There is an automatically generated online payment form with ability to enter credit card numbers in a secure environment.
- We can search and check member status.
- Members can be surveyed and results downloaded into a database.

2. Adding value to ASL conference organization

- Registered members and conference authors can upload abstracts through the website.
- Abstracts can be reviewed and edited online.
- Abstracts can be approved for publishing.
- An assessment and approvals mechanism can be set up for judging student awards.
- Abstracts are archived by the society.

3. Simplifying web content editing and newsletter publishing

- System for uploading abstracts can be used for any articles and/or documents
- The website can be edited online in various ways or using an HTML editor (eg, Dreamweaver).
- Documents can be uploaded for review by members (password protected), changes tracked and documents finalised.

4. Maintaining and tracking intellectual capital for the society.

- Intranet for society reference documents, minutes and other operational information, which can easily be made accessible to each new Executive.
- Archiving of abstracts and other documents

EDITORS NOTE

At last, the Springtime edition has arrived, a little late having missed its seasonal cues. Material for publication in the Volume 43 # 4 newsletter (December Issue) is due by **16 December, 2005.**

All articles should be forwarded, if possible, as unformatted text on a disk or via email.

ASL Home Page - http://www.asl.org.au/

This Newsletter is printed by Border Multi Print Pty Ltd Wodonga, packaged by Kalianna Pty Ltd and distributed by Australia Post.

Membership Information and contact details of the Regional Executive Members can be found at the back of this Newsletter.

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ANNOUNCEMENTS

Announcement and give away - Tropical Rivers Special Issue, Volume 56, Issue 3, Marine and Freshwater Research - go to: www.publish.csiro.au/journals/mfr

The Tropical Rivers Special Issue was derived from a stimulating meeting in 2004 in Darwin entitled "Sustainable Futures for Australia's Tropical Rivers", organised by Dr Peter Gehrke. The Special Issue contains fully reviewed articles and reviews about ecosystem processes in tropical river systems, including wetlands, estuaries and coastal environments. Contributions by leading tropical rivers scientists ensure that this is essential reading for researchers and managers from around the world with interests in the future sustainability of tropical river systems. The Special Issue is particularly timely given the recent focus on tropical systems and activities of groups such as the Tropical Rivers Forum.

A free print copy of the Tropical Rivers Special Issue is available as a give away. Sign up to the MFR Early Alert Service by 15 October 2005 (go to http://www.publish.csiro.au/?nid=25), email Dugald McGlashan at publishing.mfr@csiro.au saying you have done this, and go into a random draw for the free copy. If you already subscribe to the Early Alert service, email the editor anyway saying you would like to be in the draw and you will be entered!

The Royal Society released a report on ocean acidification on 30/6/05: The chair of the panel report, Professor Raven said: "Basic chemistry leaves us in little doubt that our burning of fossil fuels is changing the acidity of our oceans. And the rate change we are seeing to the ocean's chemistry is a hundred times faster than has happened for millions of years. We just do not know whether marine life - which is already under threat from climate change - can adapt to these changes." There may be implications for some components of inland aquatic ecosystems.

The press release and the full report are available at the Royal Society's website: www.royalsoc.ac.uk.

New Version of WEAP is available (free of charge to some users)

The Water and Sustainability Program at the Stockholm Environment Institute is very happy to announce the release of a major new version of the Water Evaluation And Planning (WEAP) system. Over two years in the making, highlights of this new version include:

* Hydrologic models, driven by climate and land use data
* Surface water/groundwater interaction model
* Instream water quality models
* Wastewater reuse
* View results on the map
* Automatic data backup
* Multilingual: English, French and Korean, with partial translations into Chinese, Spanish and Portuguese

For a description of these and the other changes, see
http://www.weap21.org/index.asp?doc=18

These enhancements build on WEAP's strengths:

* Integrated water planning system
* Scenario-based analysis
* Flexible data structures
* User-friendly interface
* GIS-based graphical interface
* User-created variables and equations
* Dynamic links to spreadsheets & other models
* Fast solution algorithms

WEAP is currently in use at over 100 sites around the world. Recent activities with WEAP include:

* Advancing stakeholder involvement and cooperative decision-making structures in watershed planning processes
* Assessing vulnerability to climate change and devising adaptation strategies
* Financial planning by water utilities
* Examining trade-offs and interactions between water allocated for food security and for environmental processes
* Understanding links between water and rural livelihoods
* Modeling downstream impacts on water quantity and quality from upstream agricultural activities and wastewater return flows
* Considering evapotranspirative demands in maximizing both ecosystem health and water supply
* Investigating re-operation of reservoirs to maximize flows to meet both human and ecologic needs

You can get the new version using the Help: Check on Internet for New Version option built into WEAP. This will download a patch of about 3 MB. Alternatively, you can download the full 20 MB installation from the WEAP web site at: http://www.weap21.org/index.asp?doc=09a. The new version is backwards-compatible with older versions--it will read and upgrade your current data sets. Licensed users of WEAP can upgrade to the new version free of charge. In addition, the license fee for WEAP is now waived for academic, governmental and non-profit organizations in developing countries. See http://www.weap21.org/index.asp?doc=17 for details.

SCUTTLEBUTT, RUMOUR AND PRATTLE

Unless you've been living in dark hole for the last few weeks you'll know that Tasmania is hosting the ASL Congress this year. Woohoo! Consequently we've been busily putting together a conference that will be remembered for generations and haven't had a chance to do much else. Apart from the ASL Pub Nights that is...

To launch both the 2005 Pub Night Series and the ASL 2005 conference website (well, it was the intended launch), a Quiz Night was held at the Republic Hotel and attracted a record 50 people! It must've been the flyer telling promising great prizes and memories that don't fade. The night was masterfully hosted by Alasdair MacDonald, whose future as compere-extraordinaire is assured and he's now available for weddings and bar mitzvahs. Jo Clapcott did a superlative job as scorekeeper throughout it all, despite occasional attempts by some scurrilous quizzers to change answers after it was too late. The night belonged to the Tennis Soaks (probably safer you don't ask) comprising the winning combination of Peter Davies, Martin Read, Lois Koehnken, Chris Bobbi, and Will Elvey, and they each won a bottle of Stepping Stone shiraz. The second-placing team, Fully Sic, also won a bottle of wine each because we were feeling generous.

The August Pub Night featured a presentation by Scott Hardie jam-packed with detail on Tasmanian galaxiids and the population biology of the golden galaxiid, *Galaxias auratus*. Much of this work, and there's a lot of it, was conducted by Scott as part of his PhD with Leon Barmuta and Rob White, and showed some intriguing relationships between spawning behaviour and lake levels, particularly their timing and rate of rise.

The September Pub Night promises more adventure as we head south for a virtual discovery of Antarctica's freshwater lakes and find out what's happening in them, and there's more cool stuff lined up for October and November. And then it's the conference so I guess we'll see you all then!

A BIT OF FUN ~ KEEP THOSE LETTERS COMING !!

Ask Onmil all the tricky limnological etiquette questions you really want answered!!

Dear Onmil
I'd like to do more field work but every time I plan a field trip, I get terrible dreams about being chased by zombies. Is this normal?

Sincerely

P. Noya

Dear P.
Have you considered that you may indeed be chased by zombies in the field or, at least, representatives of the undead? They often bear a striking resemblance to government agency staff. The best way to eliminate the danger they pose is to get them to set up a task force to workshop the issue and come up with a risk-based, outcomes-focussed, transparent solution with stakeholder involvement. Believe me, this works! And not only on the undead .....you might need similar help when you try to deal with the legions of the dammed*.

Dreaming of being chased while doing field work is a symptom of paralimnology. "Para" from the Greek word "paranoid" meaning delusions of persecution and grandeur and "limnology" meaning the scientific study of bodies of 'fresh' (inland) water. In many occupations, this would be regarded as an abnormal state. Limnologists, however, can suffer from it at any stage, some for their entire working careers. Feeling persecuted is no delusion for limnologists.....people really are exploiting your sense of achievement and self-reward to make you slave away on a pittance. Live with it! Alternatively, go join the undead.....I did.
Sincerely

Onmil (undead, but not a zombie.....well, not all the time)

*otherwise known as ecological communities downstream of water storages

CENTRE FOR RIVERINE LANDSCAPES, GRIFFITH UNIVERSITY, BRISBANE

The CRCFE Dryland Refugium project wound up on June 30 much to the disappointment of the refugium team (we will miss our field trips to the arid zone). A number of staff will remain working on refugium datasets in the first six months of the new e-Water CRC, including **Angelene Wright**, our newest staff member (via the MDFRC Northern Laboratory).

Catherine Leigh, **James Fawcett** and **Joel Huey** along with helpers have headed north to the Southern Gulf region. This three week field trip will involve collections of fish and invertebrates (including mussels), water and sediment samples for a number of postgraduate projects. There will be an in depth report on this in the next issue. **Andrew Brooks**, **John Spencer** and **Peter Brunner** have just returned from a successful gulf trip. Their's was a pilot trip to the Mitchell River catchment to begin the process of identifying sediment sources and sinks within the catchment and determining the extent to which cattle grazing and mining have increased sediment supply. Many of the rivers of this region are more like rivers of sand and there are some fascinating and extensive areas of gully erosion (if you are a geomorphologist) supplying some of this sediment. One of the major research questions will be to understand whether the gullying is a response to cattle or a natural process.

Wade Hadwen is currently conducting a Sustainable Tourism CRC research project that aims to quantify visitor responses to built (infrastructure) and natural (wilderness) features within National Parks. Specifically, he hopes to refine and improve a Tourist Pressure Index (TPI) model developed in his PhD to assist National Park staff to predict (and subsequently manage) areas within their parks that are likely to receive extremely high visitor loads. The end goal is to ensure that popular sites within National Parks are identified and proactively managed before deleterious impacts from excessive visitor loads occur. To gather information that will aid in the weighting of factors used in the TPI model, Wade has developed two short online surveys. Anyone is free to participate in these surveys (each survey is likely to take less than ten minutes to complete) and they can be accessed directly at: http://www.coastal.crc.org.au/surveys/nat_parks.html

Angela reports on the hydro-ecology workshop she attended in Colorado and the DIVERSITAS meeting in Paris, June 7-18

Angela Arthington attended the second workshop of the Global River Sustainability Project (GRSP) in Colorado involving LeRoy Poff, Robert Naiman, **Angela** and Stuart Bunn. The first workshop for this project was held at Griffith in November 2004, when LeRoy Poff and Julian Olden were visitors to CRL. GRSP is developing a long-term research program on the role of the hydrologic regime as a major driver of aquatic biodiversity, ecosystem processes and provision of ecological goods and services. The Colorado workshop developed a process for undertaking a global assessment of the condition of rivers with modified flow regimes, focusing on the status of fish assemblages, floodplains, physical habitat and nitrogen dynamics. Several papers and a research manifesto are being written from this and the November CRL workshop. GRSP will provide input into the environmental flows components of the Global Water System Project (GWSP) and DIVERSITAS. **Angela** also attended the second meeting of the Scientific Committee of the DIVERSITAS Freshwater Cross-cutting Network in Paris. Chaired by Professor Robert Naiman, this group is developing a Science Plan and a range of activities to address the causes of decline in aquatic biodiversity around the globe.

Stephen (Harry) Balcombe

INFORMATION FROM AND FOR MEMBERS

Dr. Robert G. Wetzel, scholar of aquatic ecosystems, dies at age 68

Dr. Robert G. Wetzel, who received international accolades for his research in furthering the world?s understanding of fresh water ecosystems, died at his home on April 18 after a five-month battle with lung cancer.

Wetzel was appointed William R. Kenan Jr. distinguished professor in the University of North Carolina at Chapel Hill School of Public Health department of environmental sciences and engineering in 2003. He had been on the department?s faculty since 2001 and also was a faculty member in the College of Arts and Sciences?Curriculum in Ecology.

"The loss of Professor Wetzel is a profound one for not only the family, but also for the department, the school, the university and the entire aquatic research community," said Dr. Cass T. Miller, professor and chairman of the department of environmental sciences and engineering. "Professor Wetzel was a preeminent fresh water ecologist and limnologist; a prolific researcher; an outstanding mentor of students, postdoctoral associates and young faculty colleagues; a tireless servant for the common good; and a deeply committed and compassionate human being."

Miller recently presented Wetzel with the Hutchinson Science Laureate Award for outstanding contributions to the fundamentals of limnology (the scientific study of fresh water and the life within it) and the international dissemination of knowledge. Scientists from Germany, the Netherlands, Belgium, New Zealand, Hungary, Russia and the United States collectively awarded the honor.

This award was the latest in a career of distinctions recognising his contributions to his research field. Highlights of Wetzel?s career include election to the Royal Danish Academy of Sciences (1986), the American Academy of Arts and Sciences (1993) and the International Water Academy (lifetime membership, 2000); appointment as the first T. Erlander National Professor by the Swedish National Research Council and Uppsala University in Sweden (1982-83); and recipient of the American Society of Limnology and Oceanography?s G. Evelyn Hutchinson Medal (1992) and the Society of Wetland Scientists?Lifetime Achievement Award (2000).

Further honors include being named Aquatic Ecologist of the Year in 2002, induction into the Russian Academy of Sciences in 2003 and election to the Hungarian Academy of Sciences in 2004.

Wetzel contributed crucial insights in understanding the role that grasses, algae and other plant life near or within a body of fresh water play in the aquatic ecosystem. He encouraged discussion concerning the importance of fresh water quality and conservation and had said that the availability of quality fresh water would be the greatest environmental problem in the 21st century. He published 23 books and more than 400 publications on his research; his "Limnology: Lake and River Ecosystems" (2001) is regarded as a classic treatise in the study of fresh water.

Before joining the UNC faculty, Wetzel had been Bishop professor of biology at the University of Alabama at Tuscaloosa from 1990-2001. He had also held previous faculty positions at the University of Michigan at Ann Arbor, Michigan State University and Indiana University.

Wetzel received his bachelor's and master's degrees from the University of Michigan in 1958 and 1959, his doctorate from the University of California at Davis in 1962 and an honorary doctorate from the University of Uppsala in Sweden in 1984.

FRESHWATER ECOLOGY - ARTHUR RYLAH INSTITUTE FOR ENVIRONMENTAL RESEARCH

Index of Wetland Condition

The DSE project funded by NAP and NHT is nearing completion, with Phil Papas (based at ARI) and Janet Holmes (based in the city office) recently presenting the wetland condition method to regional Victoria. Phil also recently presented the method at the ARI seminar series (www.dse.vic.gov.au/ari for details on the series). The rapid assessment method will be used by Catchment Management Authorities and other NRM agencies to measure the condition of wetlands on private and public land. A testing phase is now needed to validate and test the accuracy of the method. Training will also be an important part of this phase. Phil aims to present the final method at the ASL Congress in Hobart.

Alpine stonefly

Shanaugh McKay and Phil together with Cassandra Bryce from the Wodonga campus of La Trobe University have recently prepared a report detailing findings from a survey in the Bogong alpine area for the Flora and Fauna Guarantee Act 1988 listed predatory stonefly Thaumatoperla alpina. The survey, conducted in the Bogong alpine area, aimed to assess the status of the species (which is restricted to the Bogong alpine area) following the bushfires of 2003.The fires and burning of vegetation had the potential to impact on both the nymph and adult life stages of the stonefly through changes in water temperature and increased risk of predation.

If adult T. alpina were predated on in higher numbers during Autumn 2003 before having a chance to lay eggs in a stream, then the population could potentially experience a decrease in number of emerging adults in the third year (2006). Seventeen sites were sampled in the known stonefly habitat (small rocky streams), including eight sites where the stonefly has been recorded previously. T. alpina was found in two new locations in the survey. The stonefly was found at sites affected by the bushfires, indicating short-term survival. The longer-term impacts on the species' distribution, in the fire-affected area however, are unknown. Future surveys will help assess population trends in the longer-term. Recommendations to Parks Victoria and DSE have been made to aid in the protection of the species.

The report is in the ARI Technical Report Series, contact Shanaugh for more information 03 9450 8754.

Measuring impacts from weir desilting

Melbourne Water Corporation operate a number of small diversion weirs in the Upper Yarra catchment to supply water for domestic and industrial use in Melbourne. In order to preserve the diversion capacity and water quality diverted from small weirs, Melbourne Water propose to scour the weirs during natural high flows over the winter/spring period. The trigger inflows necessary to minimise environmental impacts and the impacts on water quality, fish and macroinvertebrate fauna are being assessed by Wayne Koster, David Crook, Di Crowther and Tim Doeg. A BACI type design has been employed for the macroinvertebrates and the fish. Radiotelemtry of blackfish is being employed to measure their behavioural response of the species to the desilting. Sampling is currently underway.

Other bug group happenings

Dave Bryant is working closely with the fauna section of ARI to determine associations between the macrobenthos of sediments in Port Phillip Bay and migratory shore bird numbers. The results will be used to assist with the adaptive management of the Western Treatment Plant to reduce the potential effects on shorebirds following the proposed reduction in nutrients entering the bay. Dave has also been assisting Phil with preliminary field testing of the Index of Wetland Condition and enjoying the clear winter skies of the Western Australian Pilbara on a recent holiday - half his luck! Mike Nicol and Shanaugh continue to work solidly through quantitative samples for a Melbourne Water Yarra River project and have been assisting with field sampling for a number of other projects. **Phil Papas**

AUSTRALIAN CENTRE FOR TROPICAL FRESHWATER RESEARCH, JAMES COOK UNIVERSITY, TOWNSVILLE

The ACTFR, in conjunction with FNQNRM (the regional NRM body for the Wet Tropics region), the Burdekin Dry Tropics Board, the Mitchell River Watershed Management Group and Qld Dept. Primary Industries and Fisheries, are about to kick off a three-year program working toward integrated management of tilapia and other noxious and translocated native fishes in NE Qld. The program covers public education to prevent further spread, field survey to determine the distribution of pest fishes, research into the ecology and impact of tilapia and methods and protocols for control programs. The study region in NE Qld, covers the catchments draining to the coast from just south of Townsville (ie, Burdekin) to Cooktown, plus the upper Mitchell catchment which drains into the Gulf of Carpentaria. A total of 19 exotic species and 36 translocated native species have been recorded for this area. The program covers all these pest fishes to some degree, though it will be mainly focused on tilapia, the most significant and widespread pest fish. The program will be led by **Damien Burrows**.

John Faithful, **Aaron Davis** and **Dom Loong** recently completed field work out at Zinifex Century mine, as part of their limnological monitoring program. Dom also backed up for an intensive month-long field sampling program in the Mulgrave River (south of Cairns) along with many other ACTFR and JCU staff, and staff from Griffith University. The Mulgrave River sampling is part of the Rainforest to Reef program, a joint collaboration between the Rainforest and Reef CRC's.

On the wetland restoration front, it has been a big year. ACTFR are part of the consortium delivering the 2-year pilot program of the Great Barrier Reef Coastal Wetlands Protection Program. So far, we have seen the successful clearing out of several major lagoons on the Burdekin floodplain, formerly infested with aquatic weeds, and the development of management plans and maintenance agreements with local stakeholders. Monitoring shows significantly improved water quality and fish communities following clearing out of these weeds. More similar successes are expected soon as additional projects progress.

Damien Burrows

BIOTECHNOLOGY & ENVIRONMENTAL BIOLOGY, SCHOOL OF APPLIED SCIENCES, RMIT UNIVERSITY

Kathryn Hassell has left the salty world to commence a PhD looking at water quality, including hypoxia,on Black Bream in the Gippsland Lakes. Liliana Zalizniak is now working with the white mouse of the fish world: Zebra Fish. Ben Kefford has been matching the results of laboratory salinity tolerance experiments to what happens in the field and has been awarded his PhD. Ryan Blackney is adapting a method we developed in salinity tolerance testing to look at copper tolerance on invertebrates. Tricia Paradise is writing up her Masters while also working at the Vic EPA. Dayanthi Nugegoda has been jet setting off to Greece and has been busy on the organising committee of the Australasian Society for Ecotoxicology conference in Melbourne, September 2005. Soon to commence in our lab is a project studying the effect of agricultural pesticides on native fish eggs and larva.

Ben J. Kefford

DIATOMA, GEOGRAPHY & ENVIRONMENTAL STUDIES, UNIVERSITY OF ADELAIDE

Peter Gell, in between convening the University of Adelaide Water Research Cluster and gearing up for a year's sabbatical and long service leave with Geoff Petts at Birmingham, is spearheading our SA Department of Water Land & Biodiversity Conservation project on the water quality history of the Coorong and lower lakes. With 30 sediment cores already taken, preliminary results reveal that **Deborah Haynes**, who has just commenced her PhD, will certainly have her work cut out for her.

Similarly, **Jennie Fluin** and **Ifteara Khanum** are yielding some interesting results from Gell's ARC Linkage with the Murray CWMB on representative Riverland wetland histories, while **Brendan Walsh** continues his Masters work on Muroondi and Swanport wetlands on the lower floodplain.

Craig McVeigh, fresh back from presenting his PhD at the Brazilian Society of Limnology Congress in Ilheus, continues to manage the Diatoma

Laboratory and is completing the first ever iconograph of tropical diatoms from the Northern Territory.

John Tibby and **Cameron Barr** have just returned from the PAGES Open Science meeting in Beijing. And whilst **John** continues his ARC Discovery examination of pre-impact condition and post-settlement modification on the Myall Lakes, Lake Ainsworth and other Eastern Australian coastal lakes, **Cameron** is finalising his fine-resolution climatic reconstruction from crater lakes western Victoria.

Earlier in the year, **Gus MacGregor** (supported by Tibby's ARC and Geosciences Australia) spent a month in the field sampling coastal lakes from Adelaide right around to northern NSW. Following another punishing stint at ANSTO's Lucas Heights Hilton, he has now joined forces with the Vic and SA EPA's to expand the coastal lake transfer function, and is knuckling down to knock off his East Gippsland and Snowy River floodplain work.

Louise Mutton has ventured back to Europe to continue her genetic work with Wym Vyverman (Gent) on benthic diatoms as biological indicators of acid mine drainage in the Northern Territory.

Fiona Little has hooked in with the Murrumbidgee CMA and embarked on a PhD examining wetland histories along the Murrumbidgee between Wagga Wagga and Balranald.

Meanwhile, it's crunch time for **Ashley Natt** and **Keeley Gray**, who are respectively completing Honours projects on the effects of the inter-basin transfers from the Murray into the South Para River Valley, and the diatom flora of the Onkaparinga River.

Gus MacGregor

FASTS

FEDERATION OF AUSTRALIAN SCIENTIFIC AND TECHNOLOGICAL SOCIETIES

Science and Technology for the Social, Environmental and Economic Benefit of Australia

"FASTS FORWARD"

Aquatic Sciences Cluster Rep?s Report – FASTS?Board Meeting August 18-19, 2005

On August 18-19, 2005, I represented the Aquatic Sciences Cluster at the FASTS? Board Meeting in Sydney (Australian Museum), presenting our cluster?s report and contributing to some of the debate on behalf of the four societies that make up this cluster. There were no questions on my report and I am hoping to have some more pithy issues from our members for the next meeting. Send me some stuff. What would you like FASTS to do for you?

Although detailed minutes will be released officially on the whole meeting, this short report is to present issues that I thought would be of particular interest to members of the societies making up the Aquatic Sciences Cluster. The President?s Report by Snow Barlow included reference to the Research Quality Framework (RQF) and alluded to a potential forum on this in 2006. Basically, Snow considered this post-election year to be a rather disappointing one for science and technology with little funding or new research and innovation initiatives. Much of his report and later discussion focused on the 'third stream?funding aspect of the RQF. FASTS will have a forum on this on October 12 in Canberra to determine what this funding should address and what FASTS members would like to see arise from this funding. Essentially, third stream funding refers to engagement by universities beyond the two core-funded missions of research and teaching; a role of dynamic interaction with society to better leverage universities? knowledge, capabilities, and facilities. While many Australian universities already do this, there are no specific permanent funding programs to

support this activity. Snow's report also introduced the new policy documents being formulated by FASTS (see below) and some proposed changes to the structure of FASTS to sustain the organisation. In November, FASTS will celebrate its 20th birthday.

Much of the two-day meeting dealt with complex aspects of amendments to the constitution, discussion of observer's voting rights, the secretary's and treasurer's reports, and planning of functions so I spare you that. To me, the interesting issues that arose were (in no particular order):

- Clarification of FASTS structure and how *you* get represented. FASTS is structured in three tiers - Council (which is everyone who is paid up), the Executive (FASTS President, President-Elect, Vice-President, Secretary, Treasurer, Policy Committee Chair, and another person to make 7), and the Board made up of the representatives of the 10 disciplines (of which Aquatic Sciences is one) plus two non-discipline clusters (representing, for example, NTEU) and the Executive. This group of 19 plus others meets three times a year - as your representative on the Aquatic Sciences Cluster, I have a vote on Board decisions on your behalf.

- It was agreed that Cluster representatives would be elected for a period of 2 years and their term would then be open for reappointment or a new person, depending on the wishes and enthusiasm of the constituent societies in each cluster. I'm happy to continue until end of 2006 and then we can reconsider alternative representation. There's no rush but I'll flag it here that your societies may want to discuss how they would like to vote in a new rep in 2007 - how do we share nominations across societies, is the election done at an Executive level, etc.?

- Pat Hutchings, our previous rep, gave a great short talk about the challenges facing researchers in the Australian Museum - primarily funding opportunities and partnerships with universities and agencies.

- Ken Baldwin, Chair of the FASTS Policy Committee, presented detailed notes (some 24 pp) expanding on the FASTS policies on their top issues in (1) enhancing innovative capacity, (2) enhancing our global competitiveness, and (3) enhancing our science culture. Rather than

unleash these on you in this extended draft phase, the Board will review them and then a revised version will be sent to the societies for consideration. To me, much of it looks 'common sense?and the real issue is how FASTS will actually bring about change in response to the policy. This brings me to the nub of much of our discussion over the 2 days – how can FASTS best represent the wishes of its constituent societies? This is not a new dilemma. But the logic goes like this. Why would someone join your society? What do they get? Lets say that part of your society?s goal is to help maintain the health and standards of our scientific community on which to build the next generation?s Australian endeavours. Is your society charged with advancing the capability of its members within a particular discipline? If so, the health of your society is fundamental to the health of Australian science. How can FASTS help your society achieve its goals, perhaps by lobbying government to provide support or funding? If your society wants to forge international links or make specific submissions, how can FASTS help?

- From the above, I also felt we needed more discussion on how we encourage young scientists (early career, whatever you want to call them) to join and be active in our societies. FASTS is acutely aware of this and is planning a forum on one aspect of this – what does a PhD mean and how has it changed in helping young scientists in training, getting a job, etc. Maybe in our societies, we can discuss how we promote involvement by young scientists in formulating policy, driving research agendas, etc. I?m keen to hear from anyone who would be interested in exploring this issue further.

- Finally, the next meeting is in Canberra on Nov 21-22 and will include the 20th birthday party so will be a big one (plus the AGM). I cannot attend as I shall be in New Zealand so is there a member of AMSA, ACRS, ASL or ASPAB who can attend in my place (preferably someone who will be in Canberra at this time), please? I shall brief you on what?s happening.

Andrew Boulton (aboulton@une.edu.au)

Centres of Excellence-Federation Fellows announcement

Minister Nelson has just announced the 11 successful Centres of Excellence and the 24 Federation Fellows. The Centres of Excellence will receive $122m in Commonwealth funding over the next five years and partner organisations have pledged to contribute $71 million to support the work of the Centres. The successful centres are:

Centre	Funding	Interim Director	Host institution
ARC Centre of Excellence in Antimatter-Matter Studies	$7 million (2005-2010).	Professor Stephen Buckman.	ANU
ARC Centre of Excellence in Coherent X-Ray Science	$9 million (2005-2010).	Professor Keith Nugent.	Melbourne
ARC Centre of Excellence in Design in Light Metals:	$14.5 million (2005-2010).	Professor Barry Muddle.	Monash
ARC Centre of Excellence for Free Radical Chemistry and Biotechnology:	$12 million (2005-2010).	Professor Carl Schiesser.	Melbourne
ARC Centre of Excellence in Ore Deposits:	$15 million (2005-2010).	Professor Ross Large.	Tasmania
ARC Centre of Excellence in Vision Science	$11 million (2005-2010)..	Professor Trevor Lamb	ANU
ARC Centre of Excellence in Cultural and Media Industries	$7 million (2005-2010).	Professor Stuart Cunningham.	QUT
ARC Centre of Excellence for Electromaterials Science	$12 million (2005-2010).	Professor Gordon Wallace	Wollongong
ARC Centre of Excellence in Innovative Science for Sustainable Management of Coral Reef Biodiversity:	$12 million (2005-2010).	Professor Terry Hughes.	JCU
ARC Centre of Excellence in Plant Energy Biology:	$12.5 million (2005-2010).	Associate Professor James Whelan.	UWA
ARC Centre of Excellence in Structural and Functional Microbial Genomics:	$10 million (2005-2010).	Professor Ben Adler.	Monash

The 24 Federation Fellows for 2005 will receive an indexed salary of around $235,000 a year for five years. Four of this year's Fellowships will be awarded to expatriate Australians, fifteen Fellowships to researchers residing in Australia and five to foreign nationals who will come to Australia. For those interested in such matters Go8 received 19 or the 24, ATN universities received 2, Innovative Research Universities received 2 and 1 went to a public sector research agency. No new or non-aligned university received a Fellowship.

Returning Australians to be awarded funding

Applicant	Current institution	Host institution
Fitzpatrick, S	Chicago	Melbourne
Gaensler, B	Harvard	Sydney
Marshall, L	Arasor Corporation	Macquarie
Parker, A	Oxford	Sydney

Foreign nationals to be awarded funding

Applicant	Country of Citizenship	Current institution	Host institution
Bowman, J	USA	UC Davis	Monash
Hodges, J	UK	Medical Research Council (UK)	UNSW
Keane, M	USA	Yale	UTS
Maini, P	UK	Oxford	Sydney
Smith, J	UK	Heidelberg	ANSTO

Resident Australians to be awarded funding

Applicant	Current institution	Host institution
Barme, G	ANU	ANU
Bond, A	Monash	Monash
Charlesworth, H	ANU	ANU
Davis, T	UNSW	UNSW
England, M	UNSW	UNSW
Hartley, J	QUT	QUT
Kepert, C	Sydney	Sydney
Kobe, B	UQ	UQ
Mattick, J	UQ	UQ
Muddle, B	Monash	Monash
Mulvaney, P	Melbourne	Melbourne
Randolph, M	UWA	UWA
Schmidt, B	ANU	ANU
Shine, R	Sydney	Sydney
Vaux, D	Walter and Eliza Hall	La Trobe

Changes to ABS data - Knowledge Based Economy and Society indicators

The Australian Bureau of Statistics have announced some changes to their annual publication - "*Measures of a Knowledge-based Economy and Society, Australia*".

As of 1 July 2005, this useful collection of indicators will no longer be updated. Most of the indicators for this publication are sourced from existing ABS publications such as Research and Experimental Development, All Sector Summary (Cat No. 8112.0). These will continue to be collected and published. Other indicators are published by other sources such as the Graduate Careers Council of Australia (GCCA).

While there is a loss of convenience to the extent that people interested in the various innovation and entrepreneurship, human capital and ICT indicators will now have to source the information from a variety of ABS

catalogues the ABS has also announced that as of 1 July all publications will now be available from the ABS website free of charge. While this makes no difference to university and, I assume, CSIRO/ANSTO/GA and other PSRA researchers because these institutions already have licence agreements with ABS that allows researchers full access, it will be a benefit for researchers based in industry who have hitherto had to buy the data. (Charges will still apply to access unpublished ABS data).

Below (and attached) there is a guide to the indicators in *Measures of a Knowledge-based Economy and Society* identifying the relevant catalogue number for future access.

Innovation and Entrepreneurship Indicators

Research and Experimental Development, All Sector Summary, Australia (ABS cat. no. 8112.0)

- Total research and experimental development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross Domestic Product (GDP)
- Total research and experimental development (R&D) expenditure by sector of performance
- Expenditure on applied research and experimental development by of performance
- Business funding of research and experimental development (R&D) by sector performing as a proportion of total Business R&D funding
- Government funded expenditure on R&D by level of government

Research and Experimental Development, Businesses, Australia (ABS cat. no. 8104.0)

- Proportion of Australian business research and experimental development (R&D) funded from overseas
- Proportion of business research and experimental development (R&D) performed overseas
- Human Resources by Selected Qualifications and Occupations Australia, 2001 ABS cat. no. 8149.0)
- International migration of human resources by qualifications and occupations

Australian Standard Classification of Occupations (ASCO), Second Edition (ABS cat. no. 1220.0)

- International migration of human resources by selected qualifications and occupations

Venture Capital, Australia (ABS cat. no. 5678.0)

- Value of venture capital drawdowns

Non-ABS Sources

R&D Database, May 2003, OECD Science, Technology and Industry (STI) Outlook 2003

- Total research and experimental development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross domestic Product (GDP)

R&D Database, May 2004, OECD Science, Technology and Industry (STI) Outlook 2004

- Total research and experimental development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross domestic Product (GDP)

OECD Main Science, Technology and Indicators (MSTI) Database

- Total research and experimental development (R&D) expenditure by sector of performance (business, government, private non-profit, higher education) as a proportion of Gross Domestic Product (GDP)
- Total R&D expenditure by sector of performance
- Proportion of Australian business R&D funded from overseas
- Government funded expenditure on R&D by level of government

Human Capital Indicators

Education and Work, Australia, (ABS cat. no. 6227.0

- Proportion of persons aged 15-64 with a non-school qualification
- Highest non-school qualification of employed persons by occupation
- Main field of highest educational attainment by labour force status (unpublished data)
- Participation in secondary and tertiary education, proportion of relevant age group (unpublished data)

- Proportion of population aged 15-64 enrolled in a course of study, by field of education and age (unpublished data)
- Unmet demand for education by labour force characteristics

Labour Force Australia (ABS cat. no. 6202.0) (February, May, August, November)
- Knowledge workers as a proportion of employed persons

Research and Experimental Development, All Sector Summary, Australia (ABS cat. no. 8112.0)
- Researchers devoted to research and experimental development

Public Libraries, Australia, (ABS cat. no. 8561.0)
- Visits to public library facilities, per capita

Libraries and Museums, Australia, 1996-1997 (ABS cat. no. 8649.0)
- Visits to public library facilities, per capita

Population by Age and Sex, Australian States and Territories (ABS cat. no. 3201.0)
- Visits to public library facilities, per capita

Attendance at Selected Cultural Venues, Australia, April 1999 (ABS cat. no. 4114.0)
- Visits to public library facilities, per capita

2001 Census of Population and Housing - What's New
- Knowledge workers as a proportion of employed persons

Non-ABS Sources

OECD, Education at a Glance: Education Statistics and Indicators, 2004
- Proportion of persons aged 15-64 with a non-school qualification
- Participation in secondary and tertiary education, proportion of relevant age group
- Proportion of population aged 15-64 enrolled in a course of study, by field of education and age

OECD Main Science and Technology Indicators
- Researchers devoted to R&D

OECD Research and Development (R&D) and Main Science, Technology and Industry (MSTI) database, May 2003 (www.oecd.org)
- Researchers devoted to R&D

OECD Science, Technology and Industry Scoreboard
- Researchers devoted to R&D

Graduate Careers Council of Australia (GCCA) http://www.gradlink.edu.au/
- Graduate outcomes by qualification, employment status (unpublished)

Labour Market Statistics- Indicators, OECD Corporate Data Environment
- Graduate outcomes by qualification, employment status

Information and Communications Technology Indicators

Internet Activity, Australia (ABS cat. no. 8153.0)
- Internet services: number of Internet service providers (ISPs) and
- access lines
- Number of household ISP subscribers, by Internet access speed
- Volume of data downloaded by household ISP subscribers
- Number of non-household (includes business and government) ISP subscribers
- Volume of data downloaded by non-household (includes business and government) ISP subscribers

Public Libraries, Australia (ABS cat. no. 8561.0)
- Internet workstations available in public libraries and proportion
- of individuals (adults aged 18 years or over) accessing the Internet via public libraries

Libraries and Museums, Australia (ABS cat. no. 8649.0)
- Internet workstations available in public libraries and proportion of individuals (adults aged 18 years or over) accessing the Internet via public libraries

Household Use of Information Technology, Australia (ABS cat. no. 8146.0)

- Internet workstations available in public libraries and proportion of individuals (adults aged 18 years or over) accessing the Internet via public libraries
- Proportion of households with access to a computer, by type of household, income and broad region
- Proportion of households with access to a mobile phone, by type of household, income and broad region
- Proportion of households with access to the Internet, by type of household, income and broad region
- Proportion of individuals (adults aged 18 years or over) accessing the Internet by age, sex, occupation, level of education and region
- Proportion of individuals (adults aged 18 years or over) using the Internet for particular activities and purposes, including accessing government services
- Proportion of individuals (aged 15 years or over) with a disability, using the Internet for particular activities and purposes, including accessing government services
- Lack of skills as a constraint to household use of computers and the Internet

Business Use of Information Technology, Australia (ABS cat. no. 8129.0)

- Proportion of businesses with computers, web sites and Internet
- access by business size
- Proportion of businesses with Internet access, by broad group
- Proportion of businesses placing or receiving orders via the Internet or web, by broad industry group
- Proportion of business income attributable to receiving orders via the Internet or web, by business size
- Business perceptions of the benefits of receiving orders via the or web
- Business perceptions of the benefits for the business of placing orders via the Internet or web

Use of Information Technology on Farms, Australia (ABS cat. no. 8150.0)

- Use of computers and the Internet on farms

Information and Communications Technology, Australia (ABS cat. no. 8126.0)

- Information and Communications Technology (ICT) industry income by broad industry group
- Information and Communications Technology (ICT) goods and services, by broad commodity group
- Trade in Information and Communications Technology (ICT), by broad commodity group
- Information and Communications Technology (ICT) industry employment

Survey of Research and Experimental Development - Businesses

- Research and experimental development (R&D) performed by the ICT industry (unpublished data)

Information Technology Survey-Business Enterprises, 2001-02 and 2002-03

- Business perceptions of the benefits for the business of placing orders via the Internet or web (unpublished data)

Non-ABS Sources

OECD Science, Technology and Industry Scoreboard 2003

- Proportion of households with access to a computer, by type of household, income and broad region
- Proportion of households with access to the Internet, by type of household, income and broad region
- Proportion of individuals (adults aged 18 years or over) accessing the Internet by age, sex, occupation, level of education and broad region

OECD, ICT database, and Eurostat, E-commerce pilot survey 2001, and Measuring the Information Economy, 2002

- Proportion of individuals (adults aged 18 years or over) accessing Internet by age, sex, occupation, level of education and broad region
- Proportion of businesses with computers, web sites and Internet access by business size
- Proportion of businesses with Internet access, by broad industry group
- Proportion of businesses placing or receiving orders via the Internet or web, by broad industry group

OECD, International Trade in Commodity Statistics (ITCS) and Structural Analysis (STAN) databases, August 2002 Measuring the Information Economy 2002 (http://www.oecd.org)

- Trade in Information and Communications Technology (ICT), by broad commodity group
- Information and Communications Technology (ICT) industry employment

New report on 1st year student experience

A DEST report by Craig McInnis et al at Unimelb's Centre for the Study of Higher Education was released yesterday. The report is the third in a series looking at 1st year student experiences at universities and follows reports in 1994 and 1999. The report, THE FIRST YEAR EXPERIENCE IN AUSTRALIAN UNIVERSITIES: FINDINGS FROM A DECADE OF NATIONAL STUDIES is available at:
http://www.dest.gov.au/sectors/higher_education/publications_resources/profiles/first_year_experience.htm

Some science specific findings are:

- Enrolments in science declined by 20% (25,000 to 20,000) - the only broad field to show a decline although data is not commensurate due to changes in DEST classifications. This decline contrasts rather bleakly with the 36% increase in 1st year enrolments over the same period. By way of contrast, tere has been a 70% increase in the number of students enrolled in the Management and Commerce field.
- Students in Science feel most strongly that parents have little understanding of what they do at university.
- Science and Engineering students most commonly agree that university subjects clearly build on their school study, while the opposite is true for students in Society/Culture, Creative Arts and Architecture.
- Science students typically use e-mail resources less than other broad fields of study for contacting lecturers and peers but use online resources more than any other broad field of study (82%).

FASTS? Submission on: *Building University Diversity: Future Approval and Accreditation Processes for Australian Higher Education*

Introduction

It is well recognised around the world that a strong science, engineering and technology (SET) base is fundamental to both; economic and social success in the increasingly competitive global knowledge economy; and, understand and addressing environmental challenges.

Higher Education is, in turn, fundamental to developing and sustaining a strong SET base as it is a crucial source of ideas, insights, innovations and knowledge through graduates, research and collaboration with community, industry and Governments at local, national and international levels.

Accordingly, a robust, credible and consistent regime for the accreditation of universities and other higher education providers is necessary to underpin quality and community confidence in higher education.

This submission argues:

- There are no compelling reasons to substantially change the National Protocols;
- Diversity is important but should not be promoted uncritically, as diversity can undermine quality;
- There is more diversity in the university sector than appreciated and rigidities in funding mechanisms are the major constraint on diversity rather than the National Protocols;
- More emphasis should be placed on collaboration to enhance diversity and student choice rather than relying on misplaced faith in competition and markets;
- The nexus of teaching and research is crucial for SET education, particularly at honours and 3rd year level;
- The challenges and demands of knowledge economies are deepening the need for research capabilities in SET teaching not reducing it;
- Competition is not a good enough reason on its own to justify expanding the number of private providers;

- Allowing new providers to simply cherry pick profitable courses undermines the capacity of existing universities to deliver low demand, higher cost or specialist courses which have important national or public benefits.

The National Protocols

FASTS strongly supports the intent of the protocols to provide a foundation for quality assurance and create a nationally consistent framework.

It is well to recall the main driver behind establishing the National Protocols in 2000 was concern that inconsistencies and highly variable accreditation processes and standards in Australian jurisdictions had allowed substandard entities, notably 'Greenwich University? to gain accreditation as an Australian 'university? and thus threatened to undermine the reputation of Australian Higher Education in the international education market.

The Guthrie report, *Further Development of the National Protocols for Higher Education Approval Processes*, noted that discussions held as part of their study 'did not reveal any arguments for substantial changes to the protocols?(p. 9).

FASTS believes there are no compelling arguments to warrant wholesale changes to the National Protocols.

Moreover, there are principles in the protocols that FASTS insists are essential for a credible, high quality accreditation regime including:

- Protection of the name 'university?in business names;
- Commitment to free inquiry (academic freedom); and
- Commitment to appropriate governance, financial and quality assurance processes to ensure integrity of academic programs.

Diversity

According to the Issues Paper, (4.1) the central issue is whether the current framework provides for sufficient diversity- notably in relation to criteria defining an Australian University - to meet the challenges confronting the higher education system including:

- changes internationally in frameworks for provision of higher education and the challenge this may represent to Australia's capacities and global competitiveness;
- new delivery technologies;
- growth of private higher education, and
- demands of knowledge economies

FASTS believes 'diversity' is an important 'good' in higher education but is concerned that this should not be promoted uncritically or in ill-defined ways.

If an outcome of any changes to the protocols simply results in stratification of higher education - characterized by a large rump of low quality, bulk provision of mediocre education and training - there are serious questions as to the national benefits of such a system. That is, diversity can undermine the more important objective of ensuring high quality provision of higher education.

The Issues Paper outlines movement in some jurisdictions toward greater diversity of institutions (3.3 - 3.8) and infers the Australian higher education framework is deficient in the global context, notably in terms of student choice.

However, more weight needs to be given to the growing international push for standardization of systems to achieve comparable degree structures, increased mobility, co-operative quality assurance and international mutual recognition of awards and accreditation systems.

This trend is evident at the Governmental level, notably the Bologna Process and the Lisbon Convention[1] but also at the field of study/professional level such as the Washington, Sydney and Dublin accords in engineering.[2]

[1] http://www.bologna-berlin2003.de/pdf/Lisbon_convention.pdf

[2] http://www.washingtonaccord.org/ provides for mutual recognition of accreditation systems in engineering and is signed by the relevant accreditation bodies in a number of countries including Australia, Canada, New Zealand, UK and USA.

Australia ratified the Lisbon Convention in 2002. FASTS notes the reasons the Joint Standing Committee on Treaties provided to support Australia?s ratification, including:

- Currently, there is unprecedented pressure upon governments to adopt policies of convergence and cooperation to ensure that higher education institutions in their countries are accessible to students from other countries...
- The Lisbon Recognition Convention provides an improved international framework for the assessment and recognition of higher education qualifications. It will enhance arrangements for exchanges of students and provide generally more flexible mechanisms for the recognition of overseas qualifications...
- If Australia does not ratify the Lisbon Recognition Convention, however, there is a real danger that it will be excluded from these developments and left outside the mainstream of leading countries in international higher education.[3]

The drive to international standardization does not and should not preclude establishment of new forms of higher education institutions but reinforces the need for critical consideration of diversity, so that the quality of higher education and degrees are not reduced.

Universities

As Guthrie notes, there is no international definition of 'university?(p. 6).

Criteria seeking to define and characterize universities or the idea(s) of a university have, for good reasons, been keenly contested and changed over the years and will continue to be so in the future. Thus FASTS sees little value in seeking overly prescriptive criteria.

There has been considerable comment for many years on the convergence within the Australian system towards large, reasonably comprehensive, multi-campus institutions seeking to gain reputation through research.

FASTS believes there is a tendency for supporters of the convergence or 'one size fits all?position to understate the diversity that does exist in the

[3] http://www.aph.gov.au/house/committee/jsct/12March2002/highnia.pdf

current system as many institutions have quite different profiles as a result of history, geography and mission.

Nevertheless FASTS agrees there are constraints in the current system that hinder development of more distinctive higher education institutions.

There are a number of factors that contribute to convergence;

- notably funding regimes,
- normative values in academic cultures linked to global reputation aligned to research, and
- global market pressures driven by 'credentialism?

Apart from funding models, the capacity for national Governments to influence these factors is limited.

It is hard to sustain an argument that the existing National Protocols have contributed in any meaningful way to convergence tendencies, although they may do so in the future.

Essentially universities are currently only funded for three activities: undergraduate teaching, higher degree research and contestable research. Given the lack of flexibility in the previous and new funding regimes in respect of student load and discipline mix, it is entirely predictable that all universities would seek to maximise their incomes by focusing, to varying degrees, on contestable research income and developing market share in;

- fee paying international students since 1985,
- full fee domestic postgraduate coursework students since the early 1990s but particularly since the cuts to funded places after 1996; and
- more recently, domestic full fee undergraduate students.

It is important to note that the commercial activities of universities, particularly in full fee tuition, in practice cross-subsidise other areas of activities and focus. Apart from differential success in contestable research, diversity in the sector is largely driven by what areas universities choose to cross-subsidise.

FASTS contends that issues around diversity cannot be adequately addressed independent of serious analysis of the constraints and consequences of the current funding regime.

Competition, Choice and Collaboration

The debate around diversity and 'what is a university?is, in some respects, a proxy for debate around competition and choice in higher education.

FASTS believes contestability and competition are important elements in a robust higher education policy and funding mix as they enhance accountability and encourage clear assessment of strengths and mission.

However, FASTS believes it is mistaken to assume that competition and market forces alone will provide diversity and quality in higher education. . Competitive markets in commodities are not necessarily diverse and typically converge around price competition for homogeneous products.

FASTS contends education is fundamentally an investment not a commodity and Governments invest in higher education to provide a wide range of national benefits.

Education includes short and long-term costs and benefits. Its intrinsic investment value for individuals, communities and Governments, is the long-term benefits it produces in terms of improved analytic skills, greater sense of self and increased capacity to fully participate in social and economic spheres. These benefits have both public and private spillovers.

The efficacy of markets in education are constrained because students are typically not well placed to make well informed choices on particular courses and institutions. This is, in part, because of lack of information and skills to make choices but more so because education itself is a complex service.

However, students are better placed to make choices on the short-term commodity elements of education - flexibility of timetables, different delivery approaches - than the long-term benefits of the investment.

Our concern is that the emphasis on competition and choice results in privileging the commodity elements at the expense of the investment character of education as evidenced, for instance, by a move away from strong general education towards narrower vocational choices with more limited utility and longevity in dynamic labour markets.

Rather than merely relying on competition to deliver diversity, FASTS urges considerably more weight should be placed on collaboration.

Rigidities in funding models and chronic under-funding have undermined the opportunities to increase student choice, mobility and efficiencies.

Given that universities have strengths in some areas but not others, it makes sense to give students more choices by allowing them the opportunity to take course units at one or more institutions.

Such flexibility will also give institutions more reason to focus on strengths rather than being compelled to maintain breadth across subjects in fields of study.

Such co-operation will clearly be of greater value in large metropolitan areas with 3 - 7 universities offering courses.

Encouraging universities to share facilities, increase staff and student mobility, and enhance articulation arrangements will provide greater diversity, choices and efficiencies provided they are appropriately resourced.

Seeking greater diversity though flexibility and collaboration reinforces the imperative for quality to underpin the sector. Universities will not be keen to have students undertake subjects at other institutions if they are not confident in the quality of the institution and its courses.

In addition, enhancing collaboration will mean higher education institutions will need to be exempt from some elements of the Trade Practices Act.

Science, Mathematics, Engineering and Technology Education

A key question of the Issues Paper is whether the nexus of teaching and research as outlined in protocol 1 should be retained as the criteria for an Australian university.

FASTS strongly advocates that the nexus of teaching and research is crucial for science, mathematics, engineering and technology education.

According to the AQF guidelines[4], characteristics of learning outcomes for a bachelor degree include:

- Development of the academic skills and attributes necessary to undertake research, comprehend and evaluate new information, concepts and evidence from a range of sources; and
- Course content is taken to a significant depth and progressively developed to a high level which provides a basis for postgraduate study and professional careers.'

The guidelines also state the Bachelor Honours 'involves some research preparation? FASTS argues the research dimensions are a necessary condition of quality SET degrees. It is also important to understand that the infrastructure required for undergraduate teaching laboratories is not the same as required for research laboratories.

1st and 2nd year level students need access to adequate teaching infrastructure. However, by 3rd year and particularly honours year, SET students need access to research infrastructure and staff capable of adequate supervision of research projects.

Accordingly, FASTS believes that the default position for SET education must be that pass and honours degrees can only be offered by institutions which provide appropriate research infrastructure and supervision.[5] (This does not preclude non-universities from offering such degrees provided they can offer commensurate experiences and facilities).

FASTS experience is that the challenges and demands of knowledge economies are driving a greater need for research capability in pass and particularly honours bachelor degrees in SET, not reducing it.

One aspect of this is the increasing use of project based learning in SET education.

[4] Available at http://www.aqf.edu.au/bmdguide.htm

[5] FASTS are not qualified to assess whether this same requirement applies to other fields of study such as business.

FASTS endorses that different degree types need to be offered to the Australian population ranging from traditional science degrees to professional and/or industry focused degrees. The type of research undertaken at the institutions offering distinct educational models will also be different, with a greater propensity to applied research emanating from the professionally oriented universities.

An obvious inference that can be drawn from FASTS position on the default requirements for SET degrees is the possibility of 1st and 2nd year SET being offered by teaching-only institutions such as might be considered in a framework that allowed for community or university colleges or institutes of technology.

While FASTS is not advocating or opposing the creation of such institutions, there are several consequences that arise from this position in respect of SET education.

1) If 'teaching only?or indeed any institutions are able to offer only 1st and 2nd year SET programs, there will need to be
    a. equitable and well supported pathways for suitably qualified students to articulate into universities with research infrastructure and capability to complete a full SET pass or honours degree;
    b. consequently stronger formal and informal collaboration between different sorts of institutions in higher education;
    c. opportunities for staff in 'teaching only? institutions to refresh their teaching through opportunities to engage with research collaborations undertaken in other relevant institutions.

2) An obvious exit point for a student doing two years of study at a teaching only institution is the newly created 'associate degree?- a qualification that has no track record or reputation in the Australian labour market;

3) Costs for 3rd and honours year SET provision are considerably higher than 1st and 2nd year studies in terms of research consumables, supervision and economies of scale. Accordingly, funding models will need to take account of differential costs by stage of education.

It is well established that there is a shortage of teachers with adequate science, mathematics and technology skills.[6] FASTS argues that science teachers must have tertiary science training and we believe it is preferable for science teachers to have a bachelor or honours degree in science and a postgraduate qualification in education as distinct from a bachelor degree in education, which includes science subjects.

Accordingly, a student enrolled at a university without the capacity to deliver bachelor honours programs in SET and mathematics would not be well placed to offer quality education programs with the necessary science, mathematics and technology education.

Teaching intensive and research intensive institutions

A theme throughout the Issues Paper is the prospects of teaching-intensive and research-intensive institutions. What 'teaching or research intensive? means is not defined.

All Australian universities provide teaching and learning across a range of fields of study. For the past decade universities have sought to identify research strengths and concentrate resources appropriate to institutional missions and capabilities. Few institutions seek to have research intensity in every field they offer undergraduate teaching.

Thus, the current system is already characterised by varying degrees of teaching and research intensity. It would appear that many universities also have embedded within their offerings 'teaching only?elements.

FASTS recognises there are differences both across and within fields of study in terms of the relationship between teaching and research and requirements in terms of general, vocational or professional education.

FASTS does not assume research - at least in the forms necessary to underpin quality in SET education - is a relevant model for all fields of teaching in universities.

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[6] See, for instance, Harris, Jensz and Baldwin, *Who's Teaching Science: Meeting the Demand for Qualified Science Teachers in Australian Secondary Schools*, report for the Australian Council of Deans of Science, CSHE, Uni of Melbourne, 2005

In short, FASTS believes the question of the nexus of teaching and research - or the nature of that nexus - is best considered in the first instance at the level of fields of study and the purpose and desired outcomes of teaching within fields as distinct from globalizing claims about the nexus (or otherwise) at institutional level.
Nevertheless, FASTS believes that the title 'university? should mean something and we are not persuaded there are good grounds to allow 'university?to apply to institutions that concentrate on, say, only one field or do no research at all in any field.

FASTS notes Guthrie3 recommendation No. 7:

> *that a new university is required to have at least three fields of study (as defined by ASCED) at commencement, all with bachelors programs and with masters and doctoral programs in at least one of those fields. Growth plans for the university should include further developments within the initial three fields of study and/or development in additional fields of study.*

To the extent that a definition of a new university is the same as the minimum definition of a university, FASTS believes this, in conjunction with requirements that go to academic freedom, free enquiry, consumer protection and adequate quality assurance, is a reasonable minimum point.

FASTS does believe that universities should not have a monopoly on all forms of higher education provisions and there are good reasons to support a few highly specialized and distinctive stand alone institutions offering degrees such as NIDA or AMC. FASTS does not have a strong view on whether such institutions should be called 'institutes? or 'colleges? or any other name, provided they are not called universities.

Private Higher Education

FASTS acknowledges the distinction between public and private institutions is becoming blurred and believes private institutions have a role to play in the provision of higher education.

As the Issues Paper acknowledges, "new private providers are seeking a marketing edge through access to the title 'university?" (3.15).

FASTS does not accept that market advantage constitutes a good reason to change the protocols if that means reduction in requirements that undermine quality and quality assurance.

Moreover, FASTS believes there should be common requirements on all institutions accredited through the National Protocols irrespective of whether they be public, not-for profit or profit institutions in terms of quality assurance, free enquiry and academic freedom, and proper processes to ensure customer protection.

Existing universities, particularly the 38 publicly funded universities, have obligations in terms of access and equity and the provision of courses where they may be a high level of public good but little commercial or private value.

There is a risk that expanding private provision will simply lead to cherry picking by private providers of profitable courses which will undermine the capacity of existing universities to ensure public good and national benefits are delivered.

If, as argued above, full fee tuition fees are a significant mechanism by which universities choose what areas it will cross-subsidise, a predictable consequence of opening up markets in areas of high demand will be a loss of diversity in the system - not a gain.

Furthermore, if the same quality outcomes from higher education are to be maintained from a system with a greater private presence, it may be necessary for the Government to increase its outlays in higher education to provide the investment necessary to support the quality of courses which no longer receive cross-subsidisation from the courses cherry-picked by private institutions

Competition is not, in and of itself, a good reason to expand private provision through diluting the requirements of the National Protocols. Rather, FASTS argues new institutions must demonstrate clear community, industry or professional needs and demands for their courses as part of the accreditation process.

REVIEWS

Book Review:

Wiggins, G.D. 2004. ***Caddisflies, The Underwater Architects.*** University of Toronto Press, Toronto xi +292 pp. ISBN 0802037143 cloth US$125.00

Reviewer: Alice Wells, Australian Biological Resources Study, Canberra

Extraordinary architectural skills, demonstrated by larval use of silk in a variety of ways, provide the key to the diversity of habits and forms among caddisflies, the order Trichoptera. This is the theme that unites the two major parts of this quite remarkable three part book through which the author weaves a tale meshed as intricately as are the nets of some of the creatures he describes.

Many of us are familiar with Wiggins? earlier book, *Larvae of the North American Caddisfly Genera (Trichoptera)*, first published in 1977, and followed by a second edition in 1996. Part II of this present book incorporates much from these texts, but is greatly expanded to include Trichoptera families worldwide. A modern classification is given for the entire order and, for all families, general notes on distribution and biology as well as diagnostic features of adults, pupae and larvae are given. For all families occurring in North America, beautifully clear and detailed illustrations show general habitus of final stage larvae and, for some families, adults as well. Diagnostic features of adults, pupae and mature larvae are also illustrated in clear line drawings. Similarly, the keys to adults, larvae and pupae, enable identification of families represented in North America, but none of the others. Thus, the target audience for the book is primarily North American. Nonetheless, especially in the first section, it will reach, inform and delight a world audience, and a varied audience at that.

In this first Part, the author has excelled in skillfully crafting a captivating, comprehensive and well-illustrated discourse as he explores evolution of Trichoptera from the ancestral terrestrial stock that gave rise to Lepidoptera and Trichoptera to the array of trophic groups represented in the order today. Throughout, the author shares his fascination with the

"underwater architects" as he inserts into the text short lessons on topics such as chemistry and hydrology; on requirements for, and origins of, early life forms; on physiological constraints on multicellular life in freshwater; on plate tectonics and their influence on world biodiversity; and on ecology and general biology of caddisflies. All the while developing the thesis that use of silk has enabled caddisfly larvae to occupy most trophic levels and penetrate almost all ecological niches, Wiggins takes examples from the order Trichoptera to deliver what is probably the most succinct, most scholarly introductory aquatic biology lesson I have ever read. In doing so, he introduces, discusses and summarises the relevant literature and hypotheses without disruption to the flow of the prose.

The smooth, uncluttered flow of the text is made possible by the neat device of relegating much of the more technical discussion, details of literature and of alternative hypotheses, to Part III, "Supplementary Information". This Part comprises the comprehensive bibliography and "Comments on the Text" which can be consulted as one reads, or makes interesting reading if referred to alone.

At the start of the book, a "Prologue" sets the scene, and between Parts I and II an "Epilogue" looks briefly at the roles caddisflies play in the environment, their place in the food web, and their significance to people. Trichoptera are valuable components of aquatic habitats as food for other animals, and as scrapers, shredders, filter-feeders and predators — but also valuable to us as indicators of the health of our waters. Wiggins has researched widely in the preparation of this book, and unusual features of Australia's fauna and aquatic systems are discussed.

This book champions these underwater architects as highly skilled and innovative craftsmen, as a model invertebrate group for study of evolutionary processes, as critical components of aquatic ecosystems and indicators of water quality, as excellent educational tools and, above all, as objects of wonder. And it succeeds in doing so. Unfortunately, the book is not cheap, at around AUS$165, but you will not be disappointed.

Some new publications members would like to draw your attention to:

Barry, M.J., Tibby, J., Tsitsilas, A., Mason, B., Kershaw, P. & Heijnis, H. (2005) A long term lake-salinity record and its relationships to Daphnia populations. Archiv fur Hydrobiologie 163(1): 1-23.

Bickford, S. & Gell, P. (2005). Human impact on Holocene environments: Vegetation History and Aboriginal wetland use as recorded in a microfossil profile from a wetland in the Fleurieu Peninsula, South Australia. The Holocene 15(1): 200-215.

Gell, P., Tibby, J., Fluin, J., Leahy, P., Reid, M., Adamson, K., Bulpin, S., MacGregor, A., Wallbrink, P. and Walsh, B. (2005). Accessing limnological change and variability using fossil diatom assemblages, south-east Australia. River Research & Applications 21:257-269.

Gell, P.A., Bulpin, S., Wallbrink, P., Hancock,G. & Bickford, S. (2005) Tareena Billabong – an palaeolimnological history of an ever-changing wetland, Chowilla floodplain, Lower Murray-Daring Basin, Australia. Marine & Freshwater Research 56: 441-456.

Grattan, J.P., Gilbertson, D.D., Harvey, N. Gell, P. & Bourman, R. (2004) History of local and regional atmospheric lead, copper and arsenic pollution in South Australia: a reconnaissance in dolomitic lagoon sediments in the lower Coorong. South Australian Geographical Journal, 103: 43-61.

Harbott, E.L., M.R. Grace, J.A. Webb, and B.T. Hart, "Small-scale temporal variation and the effect of urbanisation on extracellular enzyme activity in streams", Journal of Environmental Monitoring, 2005, volume 7, issue 9, pages 861 - 868.

Harbott, E.L., M.R. Grace, "Extracellular enzyme response to bioavailabily of dissolved organic C in streams of varying catchment urbanization", Journal of the North American Benthological Society, 2005, Issue 24(3), pp 588 - 600.

MacGregor, A.J., Gell, P.A., Wallbrink, P.J. and Hancock, G. (2005) Natural and post-European settlement variability in water quality of the lower Snowy River floodplain, eastern Victoria, Australia. *River Research & Applications 21: 201-213.*

Page, Timothy J., Satish C. Choy, and Jane M. Hughes (2005) The Taxonomic Feedback Loop: symbiosis of morphology and molecules, *Biology Letters* 1: 139-142

Page, Timothy J., Andrew M. Baker, Benjamin D. Cook, and Jane M. Hughes (2005) Historical transoceanic dispersal of a freshwater shrimp: the colonization of the South Pacific by the genus *Paratya* (Atyidae), *Journal of Biogeography* 32: 581-593

FORTHCOMING CONFERENCES/WORKSHOPS

ASL CONFERENCE 2005

The 44 th ASL Congress will be held from 28 th November - 2 nd December 2005 in sunny (but often quite brisk) Hobart.

We are now inviting submission of abstracts for talks and poster presentations from all aspects of limnology.

Registration for the conference is through the !!BRAND NEW!! ASL website[link]. Similarly, abstract submission will be high tech via the same "you beaut" website.

1 September: Early registration ends
30 September: Abstracts due
1 November: Late registration ends

ASL VOLUNTEERS

The following members have volunteered to speak as experts on behalf of the ASL. If you wish to be included on the list or amend your contact details, please contact:
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